IGFBP-3 expressing rekombinant vaccinia viruses used for tumor therapy

Insulin-like growth factor-binding protein-3 (IGFBP-3) is a major regulator of endocrine effects of IGF and is capable to suppress the growth of variety of cancer. Several studies have shown that IGFBP-3 can induce the apoptosis of cancer cells via IGF-dependent and IGF-independent mechanisms.

In our study, we have constructed recombinant vaccinia viruses (VACV) expressing IGFBP-3 under the control of the early H5 and synthetic early/late (E/L) promoter to investigate the potential effect on cancer growth in our cervical cancer model. We have shown that the expression of IGFBP-3 alone had no effect on tumor growth. On the other hand, the co-expression of IGFBP-3 enhanced the anti-cancer effect of immunization with the fusion protein SigE7LAMP, which gave rise to the anti-cancer immunity directed against HPV16 induced tumors. We have shown that the double-recombinant P13-SigE7LAMP-H5-IGFBP-3 can enhance the protective immune responses against MK16/ABC induced tumors. Furthermore, we have show that both double-recombinant viruses P13-SigE7LAMP-H5-IGFBP-3 and P13-SigE7LAMP-E/L-IGFBP-3 can increase the anti-cancer effect of SigE7LAMP expression in the therapy of TC-1 induced tumors.

Key words: IGFBP-3, IGF, VACV, HPV16, E7 oncoprotein, cancer, apoptosis, cancer therapy, immune response